

G. Suryan (1924–2006)

When I joined the Indian Institute of Science in 1956, R. S. Krishnan, the Head of the Physics Department, told me that I would be working with G. Suryan. 'He is a man full of ideas', Krishnan added. And indeed he was!

Suryan wrote his first paper on acoustics when he was thirteen years old. He was the first person in India to observe the phenomenon of Nuclear Magnetic Resonance. The flowing liquid method he developed to bypass the saturation of NMR signals was a brilliant idea and was widely cited internationally. My Ph D problem involved building a wide-line NMR spectrometer. His exceptional knowledge about materials and techniques was valuable in building this kind of spectrometer for the first time in the country and it worked very well for a couple of decades, much after I had left the Institute in 1962 to join the Bhabha Atomic Research Centre. The seed of my continued interest in indigenizing advanced instruments can be traced back to my early years with Suryan. He did not co-author the paper I wrote on the NMR spectrometer and other papers I wrote on hydrogen bonding studies using it, due to some principle or some stray comment from a colleague which upset him; I could never make out.

For my M Sc degree by research – I had the B Sc (Hons.) degree from the

Madras University – I worked on a magnetic storage system designed by Suryan for Fourier Synthesis in X-ray crystal structure analysis. This was a clever idea of synchronous recording of harmonics on a magnetic drum with controlled amplitudes and phases and reading out with a long pick-up head. *Chithralekha*, as it was called, worked well and was a great leap forward from the Beevers–Lipson strips the crystallographers next door in the Physics Department had to toil with. This analogue computer, on which S. Krishnan was already working when I joined, took us to front-line electronics areas of those days like phase-sensitive detection. In the late fifties, the rapid advances in digital computing overwhelmed analogue computers of this type. Suryan's *Chithralekha*, was one of the front-runners at that time for Fourier synthesis, along with Ray Pepinsky's machine in Pennsylvania State University.

S. Krishnan and I were also enormously impressed by his rare mechanical engineering skills. Both of us remember the 16 profile cut disks with an illuminated slit and photocell on either side used to produce the harmonic wave forms. The huge gear-box, with all different gear ratios between adjacent shafts, which were approximately equally spaced, was a marvelous achievement for a physicist and to realize the actual spur gears, selecting

the actual cutters to be used and every detail of the gears was, we think, a remarkable achievement of Suryan. It would be that even if the other limitation of a shoe-string budget was not considered. We remember the many discussions with the foreman of the (central) workshop, in every one of which the didactic Suryan was instructing the other party, who was struggling to understand the basics of milling gear wheels!

He was one of the rare scientists who was comfortable in his interactions with industry. The pioneering efforts with Mettur Chemicals for building India's first silicon foundry and his later interest in glasses are examples.

A man of many parts, very simple in his habits, and a man very devoted to his family, brilliant and original, Suryan perhaps did not get fully the scientific recognition he deserved in an academic value system, which over-emphasized – and which still overemphasizes – the number of publications as a measure of scientific achievement. But today's India, on a fast-track growth path, also needs more Suryans.

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